

REMARKS/ARGUMENTS

Favorable consideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-3 and 17-24 are presently pending in this application, Claims 1 and 19 having been amended and Claim 24 having been newly added by the present amendment.

In the outstanding Office Action, Claims 1, 2 and 19 were rejected under 35 U.S.C. §102(b) as being anticipated by JP 2002-226871 (hereinafter “JP ‘871”); and Claims 1-3 and 17-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over JP ‘871.

Claims 1 and 19 have been amended and Claim 24 has been added herein. These amendments and additions in the claims are believed to find support in the specification, claims and drawings as originally filed, for example, the specification: page 9, line 20; page 8, lines 8-16; page 6, lines 14-19; and page 13, lines 8-13, and no new matter is believed to be added thereby. If, however, the Examiner disagrees, the Examiner is invited to telephone the undersigned who will be happy to work in a joint effort to derive mutually satisfactory claim language.

Before addressing the rejection based on the cited reference, a brief review of Claim 1 as currently amended is believed to be helpful. Claim 1 is directed to a process for decomposing a polymer having no chlorine into a monomer or oligomer and recites “hydrolyzing a polymer having no chlorine with sub- or supercritical water, at least a part of the polymer being a polymer comprising a constitutional unit derived from an organic acid in the molecular structure, and the polymer being contacted with sub- or supercritical water in the presence of a water-insoluble base; and recovering a monomer or oligomer obtained by decomposition of the polymer, wherein the water-insoluble base comprises at least one compound selected from the group consisting of CaCO_3 and BaCO_3 .”

By hydrolyzing the polymer as such, the side reaction due to an organic acid can be suppressed, the decomposition of an organic acid itself can be inhibited, and a reusable monomer or oligomer, *e.g.*, an organic acid and an alcohol, can be produced and recovered in a high yield.¹

It is respectfully submitted that JP '871 does not teach or suggest "hydrolyzing a polymer with sub- or supercritical water, at least a part of the polymer being a polymer comprising a constitutional unit derived from an organic acid in the molecular structure, and the polymer being contacted with sub- or supercritical water in the presence of a water-insoluble base ..., wherein the water-insoluble base comprises at least one compound selected from the group consisting of CaCO_3 and BaCO_3 " or "recovering a monomer or oligomer obtained by decomposition of the polymer" as recited in amended Claim 1.

More specifically, according to the process recited in amended Claim 1, a "polymer having no chlorine" is hydrolyzed in the presence of CaCO_3 and/or BaCO_3 . These water-insoluble bases are very effective not in capturing halogens as in the case of the oxides and hydroxides described in JP '871 but in accelerating or improving the efficiency of hydrolysis of the polymer by inhibiting the side reaction caused by the organic acid and the self-decomposition of the organic acid. Thus, the high-yield recovery of a monomer and an oligomer is made possible. The process described in JP '871 is characterized in that the inorganic oxides and/or the inorganic hydroxides are used to capture halogens. JP '871 describes a process in which plastics is gasified by the decomposition of the plastics with high-temperature and high-pressure water and gaseous substances are obtained at 25° C under the atmospheric pressure. The JP '871 process *requires inorganic oxides and/or inorganic hydroxides* in order to avoid the wear of the reactor caused by halogens from the

¹ Specification, page 7, lines 16 to 21, page 8, lines 8-16 and the Examples.

decomposition of halogen-containing plastics,² and states that the presence of inorganic oxides and/or inorganic hydroxides such as NaOH and KOH is necessary during the reaction.³ It is believed that from JP '871, one may recognize that the efficiency of hydrolysis can be accelerated or improved by the use of *water-soluble bases* such as NaOH and KOH, but not the use of *water-insoluble bases* such as CaCO₃ and/or BaCO₃. As such, it is respectfully submitted that it is not obvious to utilize the carbonates such as CaCO₃ and/or BaCO₃ as the inorganic oxides described in the process of JP '871.

Therefore, the subject matter recited in amended Claim 1 is believed to be distinguishable over JP '871 and is not anticipated thereby. Moreover, because JP '871 fails to disclose the subject matter recited in Claim 1, its teachings are not believed to render the process recited in amended Claim 1.

Likewise, Claim 19 has been amended to recite: "hydrolyzing a polymer with sub- or supercritical water, at least a part of the polymer being a polymer comprising a constitutional unit derived from an organic acid, the polymer being contacted with sub- or supercritical water in the presence of a water-insoluble base, the water-insoluble base being in an amount sufficient such that hydrolysis dominates over pyrolysis in decomposition of the polymer; recovering a monomer or oligomer obtained by the decomposition of the polymer, wherein the water-insoluble base comprises at least one compound selected from the group consisting of CaCO₃ and BaCO₃" and is believed to be also distinguishable over JP '871.

Regarding Claim 24, Claim 24 is directed to a process for decomposing a polymer into a monomer or oligomer and recites "hydrolyzing a polymer with sub- or supercritical water, at least a part of the polymer being a polymer comprising a constitutional unit derived from an organic acid in the molecular structure, the polymer being contacted with the sub- or

² See, JP '871, paragraph 0017.

³ See JP '871, paragraphs 0017 and 0018.

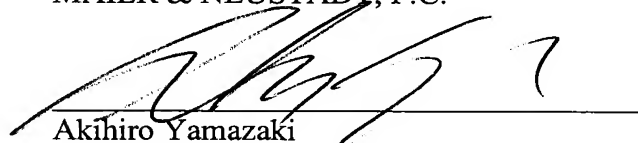
supercritical water in the presence of a water-insoluble base comprising Ca(OH)_2 ; and recovering a monomer or oligomer obtained by decomposition of the polymer, and an organic acid calcium salt.” On the other hand, JP ‘871 states that in the process, calcium is recovered as CaCl_2 . Thus, the subject matter recited in Claim 24 is believed to be distinguishable from JP ‘871.

For the foregoing reasons, Claims 1, 19 and 24 are believed to be allowable. Furthermore, since Claims 2, 3, 17, 18 and 20-23 depend from either Claim 1 or 19, substantially the same arguments set forth above also apply to these dependent claims. Hence, Claims 2, 3, 17, 18 and 20-23 are believed to be allowable as well.

In view of the amendments and discussions presented above, Applicants respectfully submit that the present application is in condition for allowance, and an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

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